

.....

p: tac

AAATGAGCTG TTGACAATTA ATCATCGGCT CGTATAATGT GTGGAATTGT GAGCGGATAA

EcoRI SacI KpnISmaI

CAATTTTACA CAGGAAACAG AATTCGAGCT CGGTACCCGG GCTACATGGA GATTAACTCA

RBS | -> α-globin

ATCTAGAGGG TATTAATAAT GTATCGCTTA AATAAGGAGG AATAACATAT GGTGCTGTCT

CCTGCCGACA AGACCAACGT CAAGGCCGCC TGGGGTAAGG TCGGCGCGCA CGCTGGCGAG

TATGGTGCGG AGGCCCTGGA GAGGATGTTT CTGTCCTTCC CCACCACCAA GACCTACTTC

CCGCACTTCG ATCTGAGCCA CGGCTCTGCC CAGGTTAAGG GCCACGGCAA GAAGGTGGCC

GACGCGCTGA CCAACGCCGT GGCGCACGTG GACGACATGC CCAACGCGCT GTCCGCCCTG

AGCGACCTGC ACGCGCACAA GCTTCGGGTG GACCCGGTCA ACTTCAAGCT CCTAAGCCAC

TGCCTGCTGG TGACCCTGGC CGCCACCTC CCCGCCGAGT TCACCCCTGC GGTGCACGCC

-> |

TCCCTGGACA AGTTCCTGGC TTCTGTGAGC ACCGTGCTGA CCTCCAAATA CCGTTAACT

RBS | -> β-globin

AGAGGGTATT AATAATGTAT CGCTTAAATA AGGAGGAATA ACATATGGTG CACCTGACTC

CTGAGGAGAA GTCTGCCGTT ACTGCCCTGT GGGGCAAGGT GAACGTGGAT GAAGTTGGTG

GTGAGGCCCT GGGCAGGCTG CTGGTGGTCT ACCCTTGGAC CCAGAGGTTT TTTGAGTCCT

TTGGGGATCT GTCCACTCCT GATGCTGTTA TGGGCAACCC TAAGGTGAAG GCTCATGGCA

AGAAAGTGCT CGGTGCCTTT AGTGATGGCC TGGCTCACCT GGACAACCTC AAGGGCACCT

TTGCCACACT GAGTGAGCTG CACTGTGACA AGCTGCACGT GGATCCTGAG AACTTCAGGC

β108Asn->Gln

TCCTGGGACA AGTACTGGTC TGTGTGCTGG CCCATCACTT TGGCAAAGAA TTCACCCAC

CAGTGCAGGC TGCCTATCAG AAAGTGGTGG CTGGTGTGGC TAATGCCCTG GCCCACAAGT

-> | SphI rrB (5S, T1, T2)

ATCACTAAGC ATGCATCTGT TTTGGCGGAT GAGAGAAGAT TTTGAGCCTG ATACAGATTA

NsiI

.....

FIG. 1A



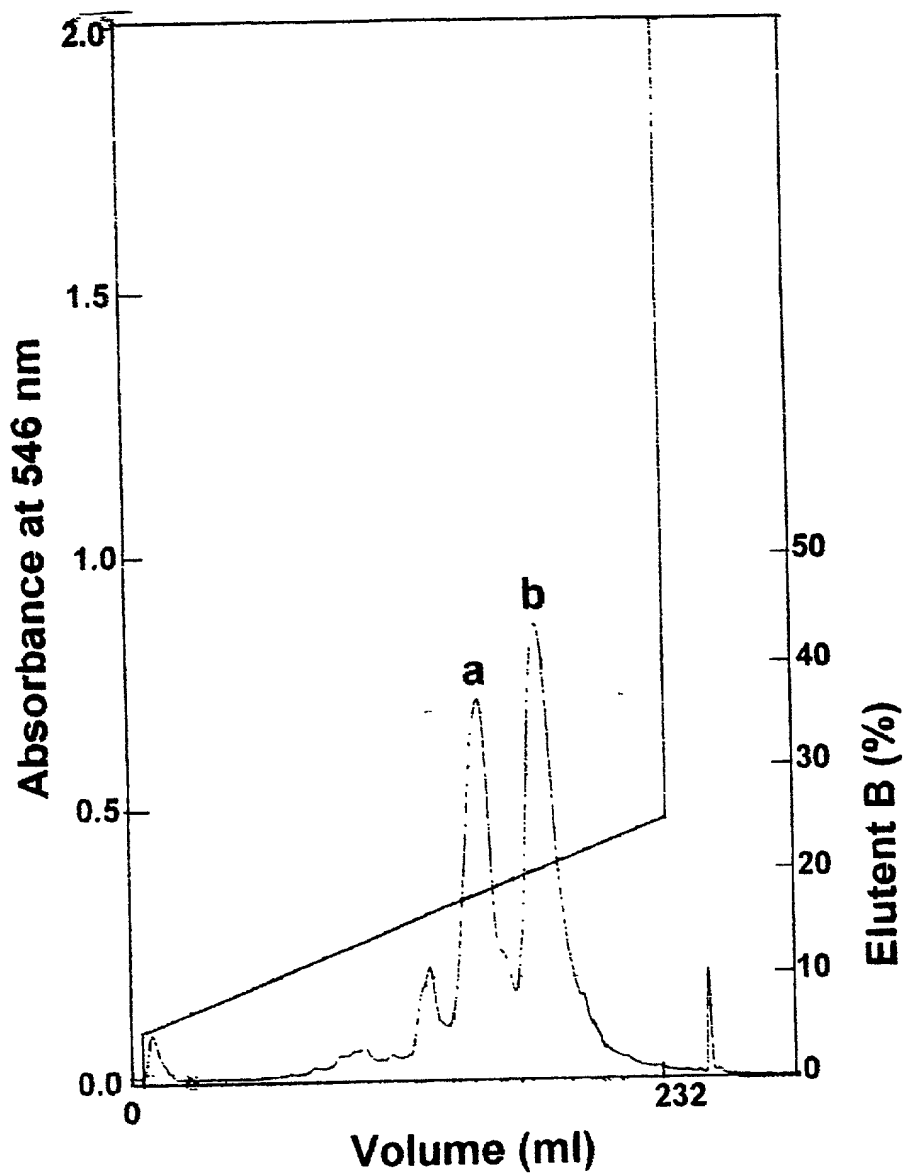


FIG. 2A

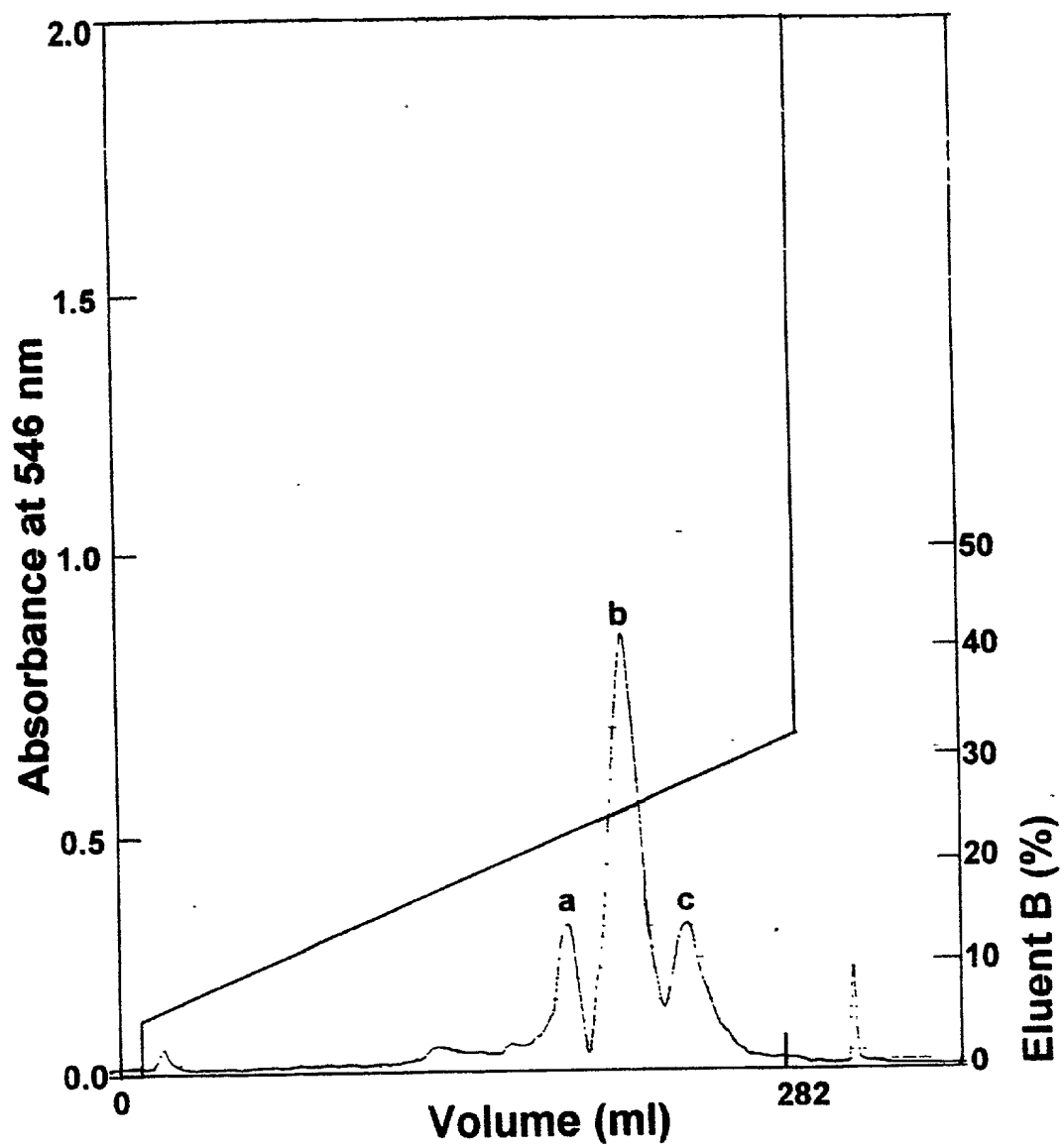


FIG. 2B

FIG. 3A

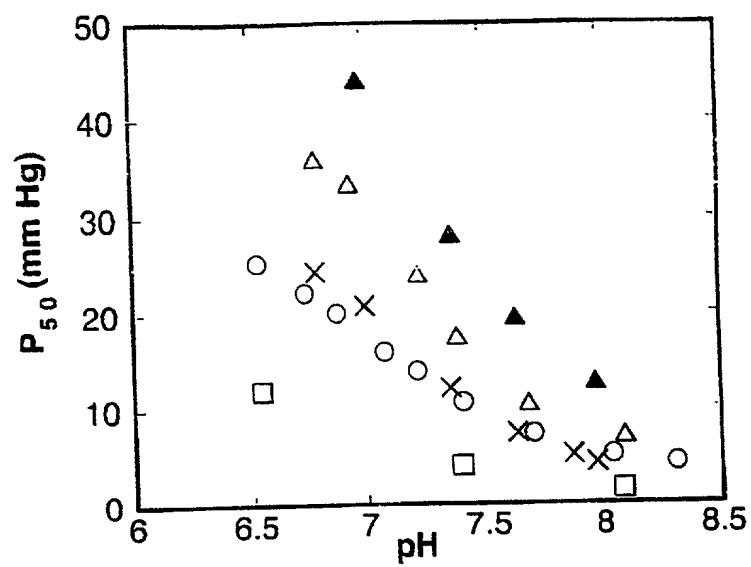
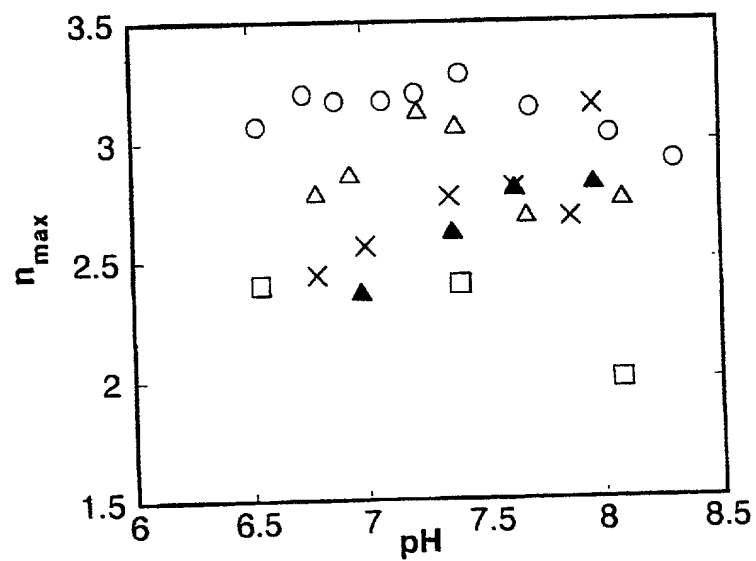


FIG. 3B



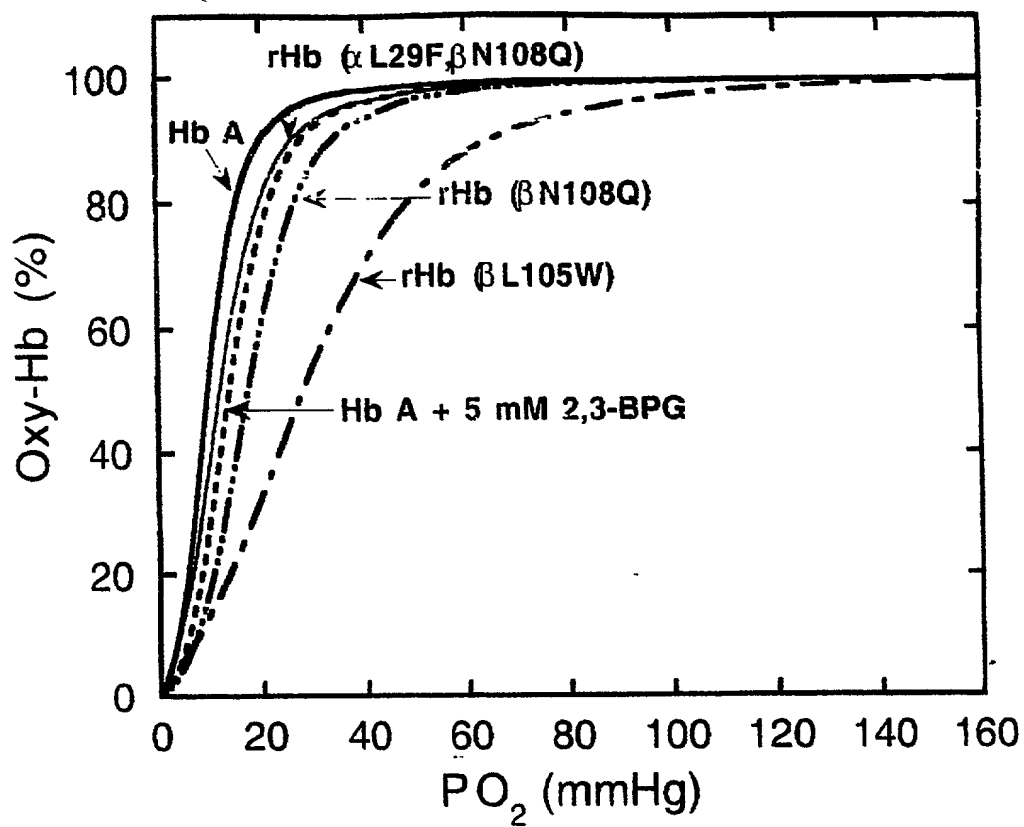
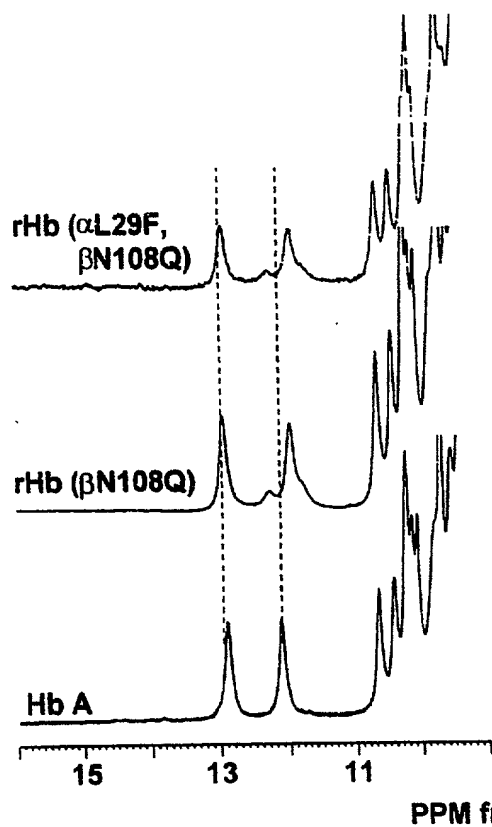
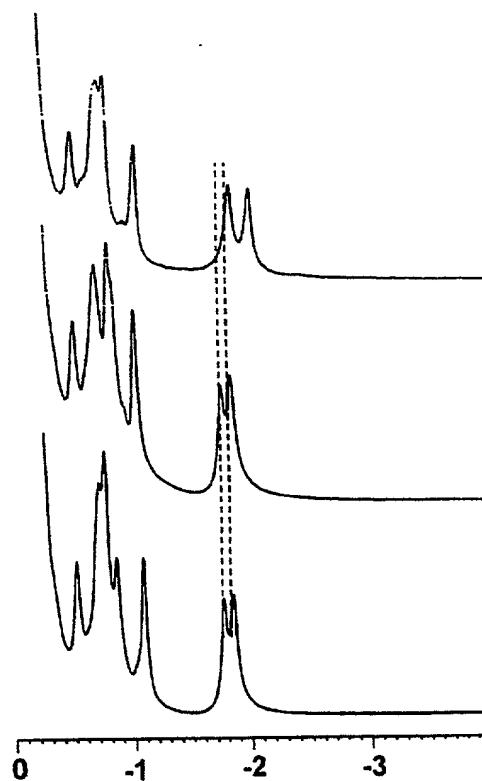


FIG. 4

FIG. 5



**FIG. 6A**



**FIG. 6B**



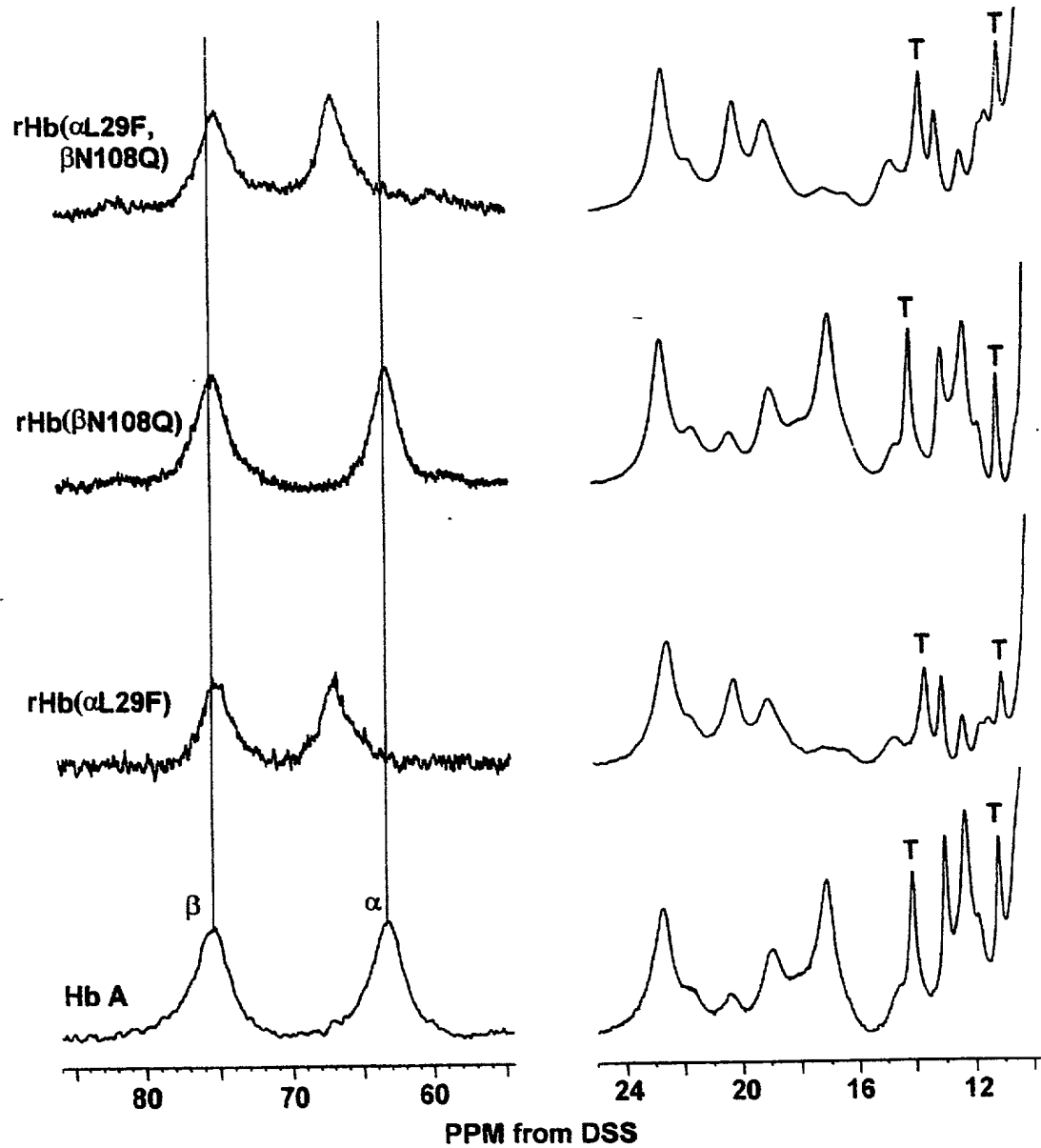


FIG. 7A

FIG. 7B

Figure 1 displays four stacked  $^{13}\text{C}$  NMR spectra of poly(2-vinylpyridine) under different conditions. The x-axis represents the chemical shift in ppm, with major tick marks at 15, 13, and 11. The spectra are labeled as follows:

- (a) Solid state:** Shows a broad peak around 14 ppm and a smaller peak around 12 ppm.
- (b) Solid state with TMS:** Shows a small peak labeled 'T' at approximately 14.5 ppm, a broad peak around 14 ppm, and a smaller peak around 12 ppm.
- (c) Solid state with TMS and  $T_2$  relaxation:** Shows a small peak labeled 'T' at approximately 14.5 ppm, a broad peak around 14 ppm, and a smaller peak around 12 ppm. The peaks are more defined than in (b).
- (d) Solution state:** Shows a small peak labeled 'R' at approximately 14.5 ppm, a broad peak around 14 ppm, and a smaller peak around 12 ppm. The peaks are the most defined and sharp among the four spectra.

FIG. 8B

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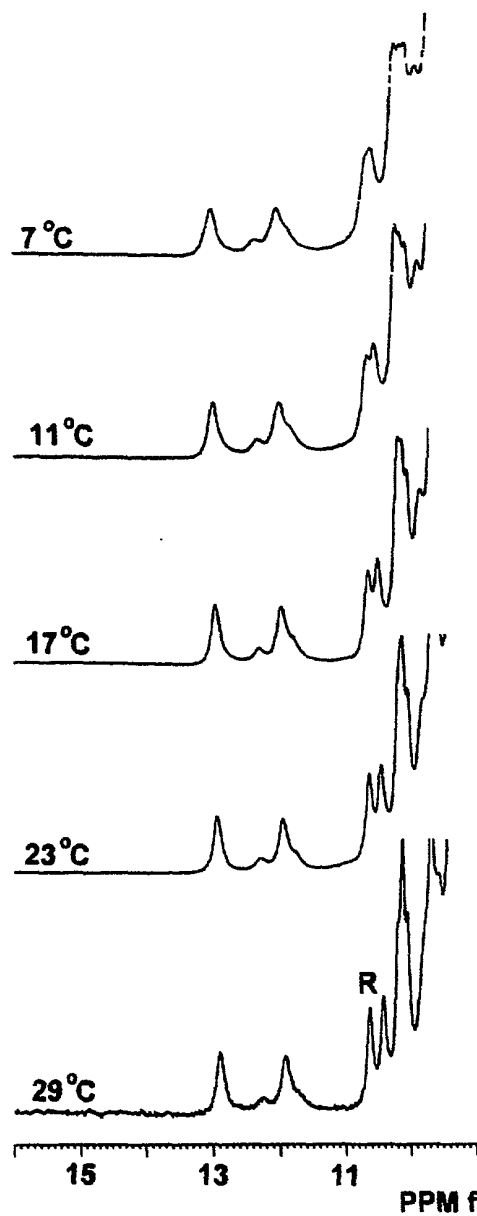


FIG. 9A

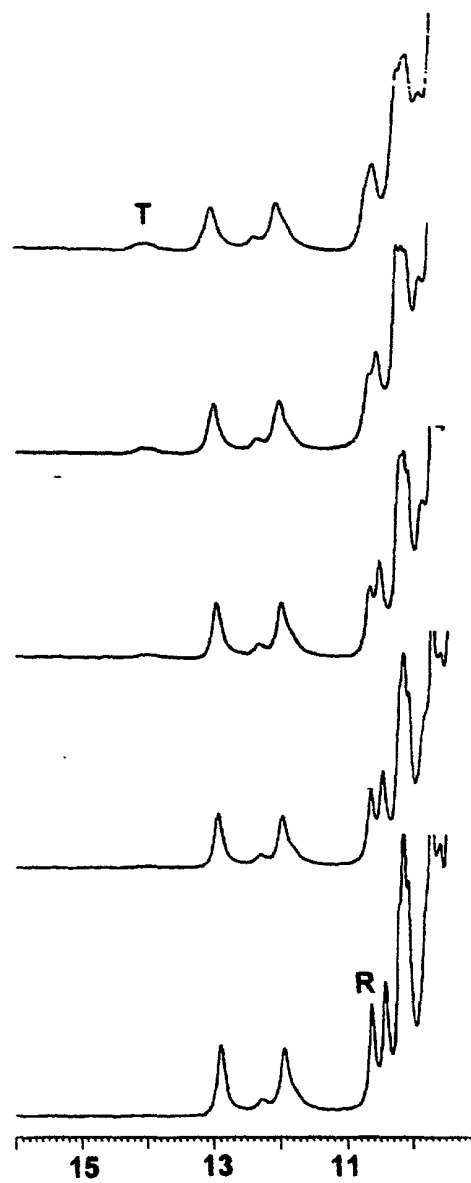


FIG. 9B

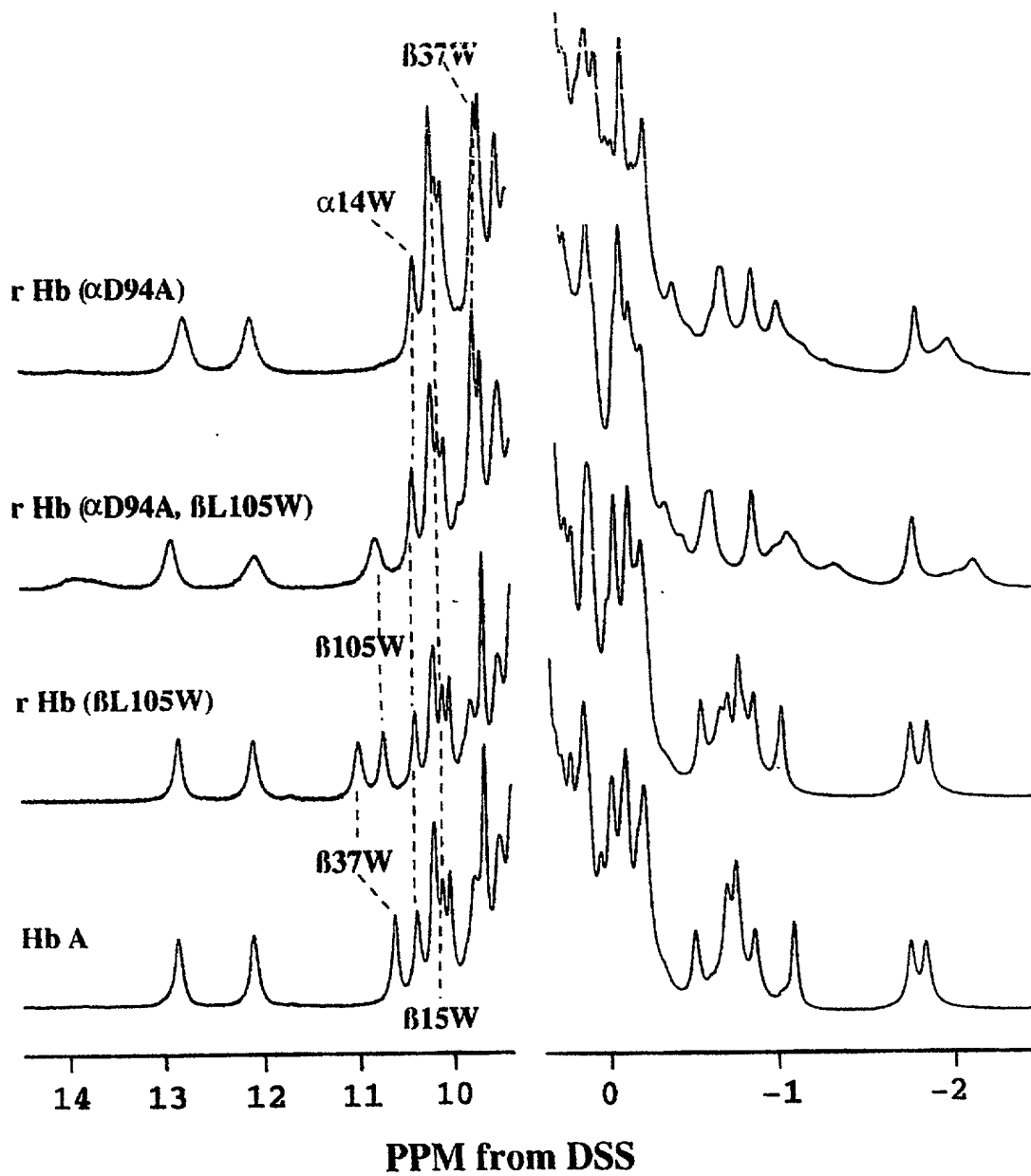


FIG. 10A

FIG. 10B

FIG. 11A

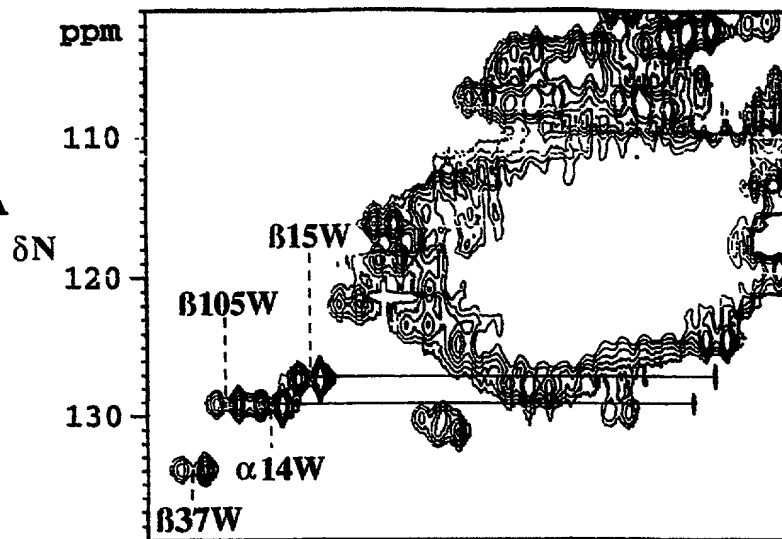
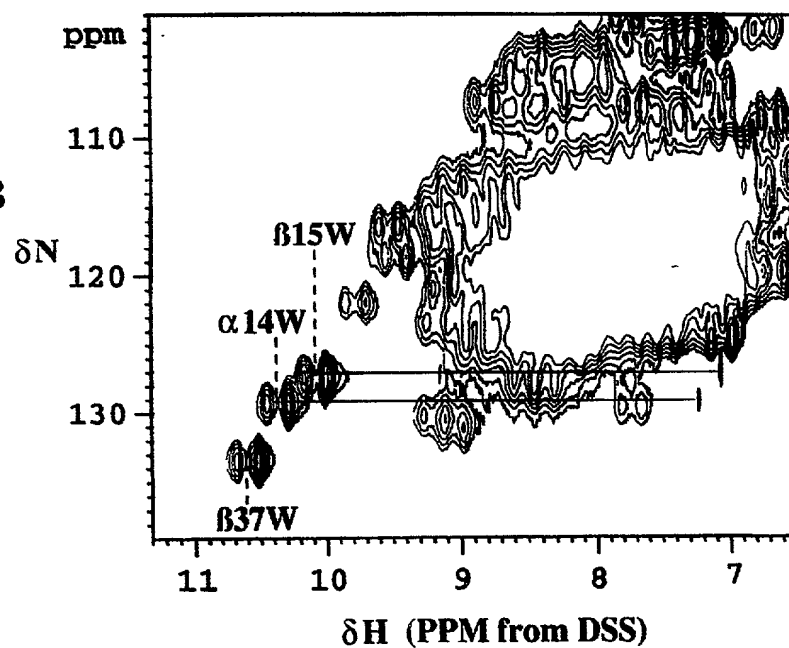


FIG. 11B



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FIG. 12A

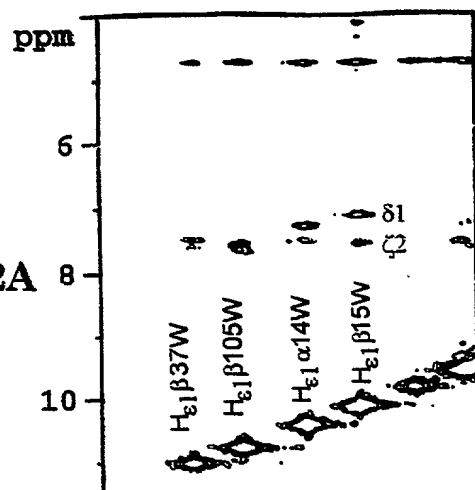


FIG. 12B

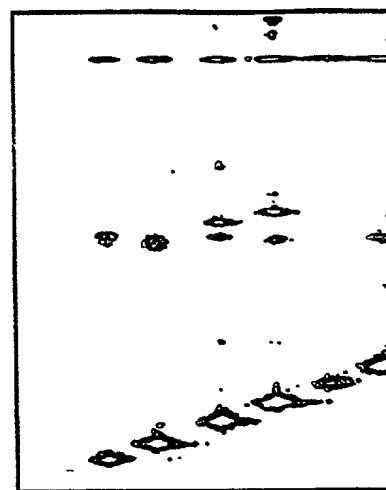


FIG. 12C

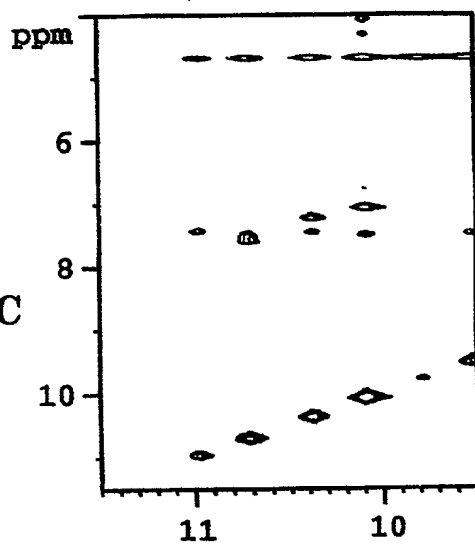
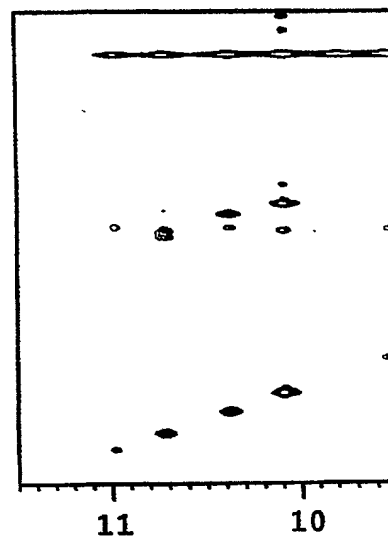


FIG. 12D



PPM from DSS

**FIG. 13C**

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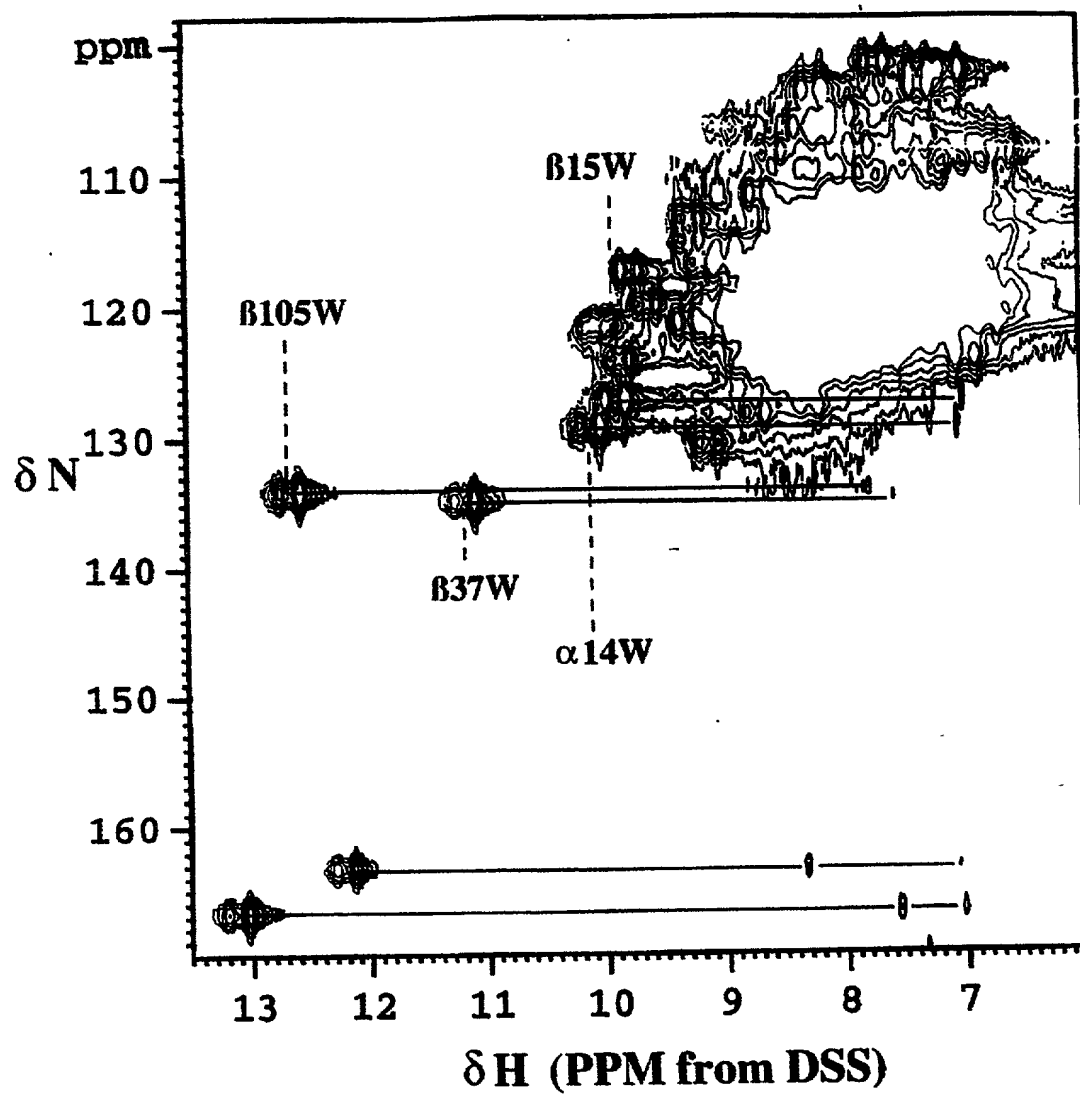


FIG. 14



FIG. 15A

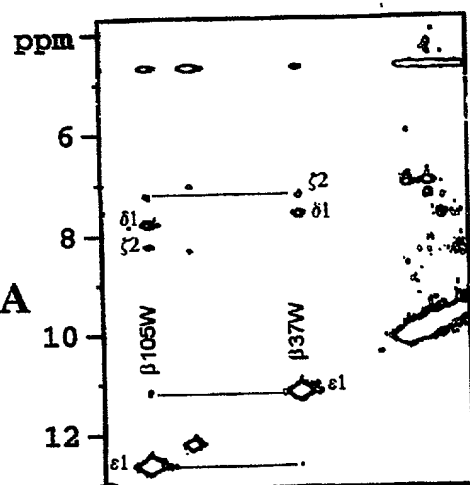


FIG. 15B

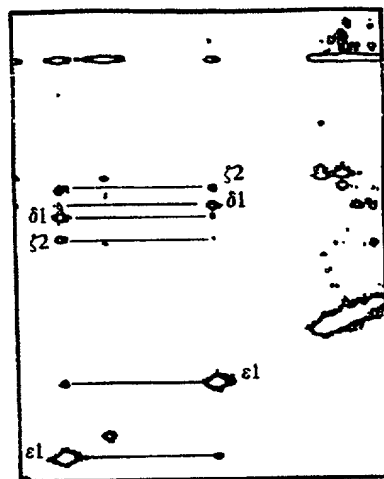


FIG. 15C

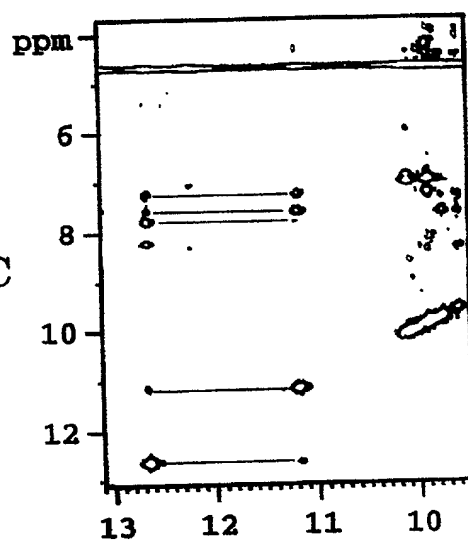
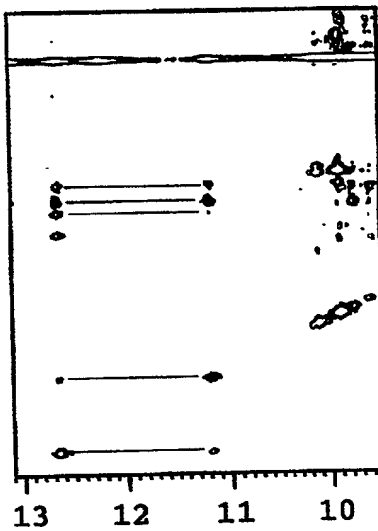


FIG. 15D



PPM from DSS

FIG. 16 A

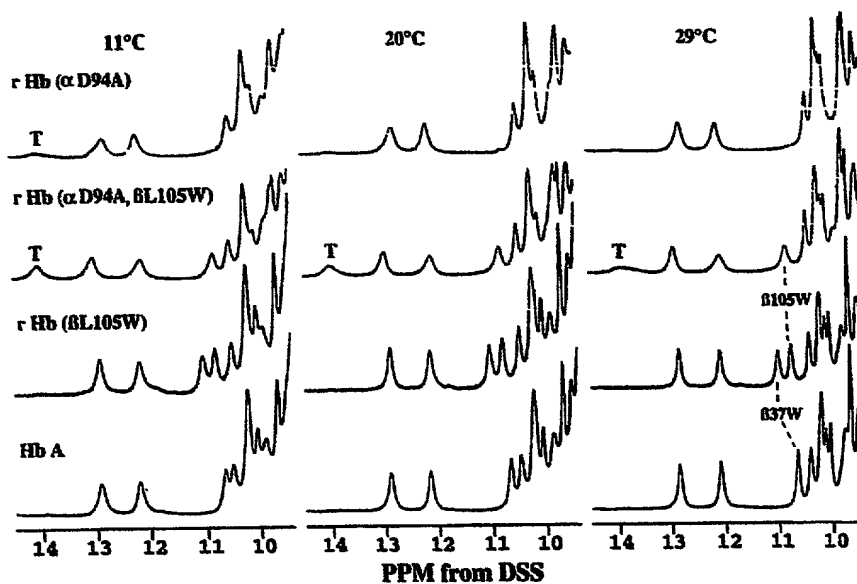


FIG. 16B

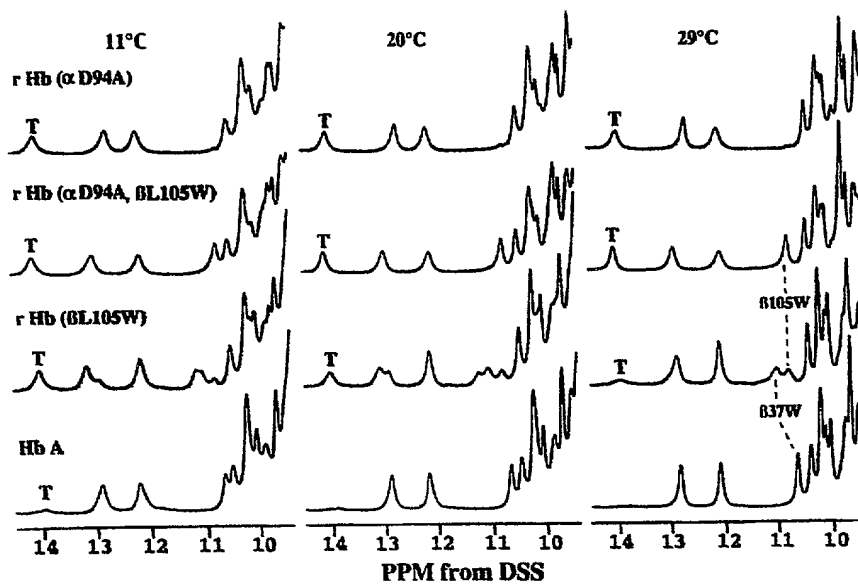


FIG. 17A

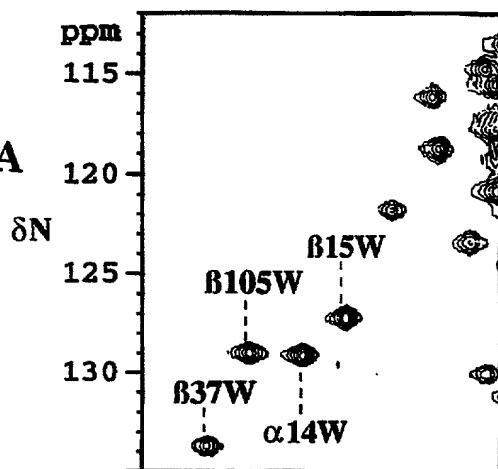


FIG. 17B

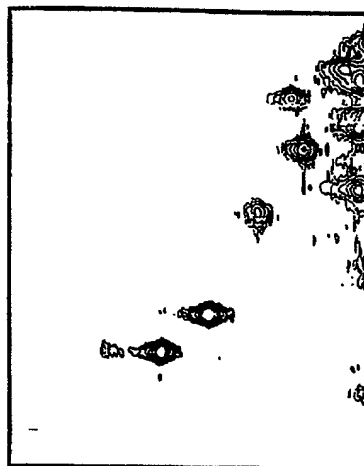


FIG. 17C

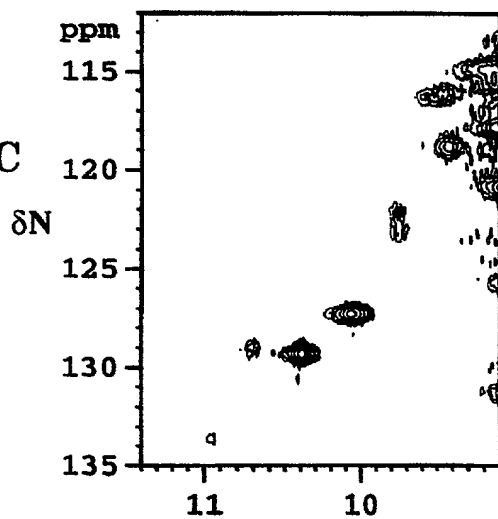
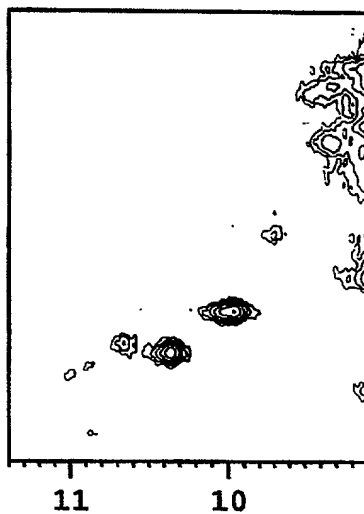


FIG 17D



$\delta H$  (PPM from DSS)

FIG. 18A

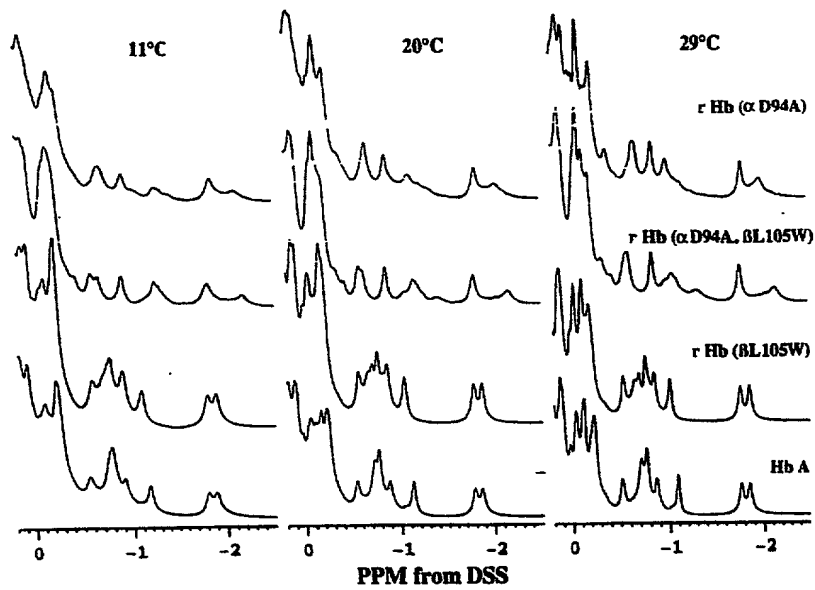


FIG. 18B

